

THE IDENTIFICATION OF SOME FLAX INTRODUCTIONS*

By

A. EL-GAZZAR¹, A. MOMTAZ² and S. GAA FAR³

1. Botany Dept., Faculty of Science, Cairo University.
2. Fibre Crops Research Section, Field Crops Res. Institute, Agric. Res. Centre, Giza.
3. Fibre Crops Research Section, Field Crops Res. Institute, Agric. Res. Centre, Bahtim.

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INTRODUCTION

The identification of cultivated plants is of great importance to their growers, breeders, and others interested in flax crop. Agronomists recognize the difference between the several geographical types and the important commercial varieties by certain characters of the seed plant, and flowers. With the recent development of new varieties by breeding, however, there is an urgent need for a system of classification and description that will be enable the agronomists and the growers to identify the varieties both correctly and easily.

The keys are only one of the several methods used now in botanical identification. The other methods (e.g. the poly claves) have recently been reviewed by Pankhurst (1974) and all aim at making the identification of plants both easier and more accurate than it is at present performed. However, the keys remain the most widely used means of identifying unknown plants, and numerous methods have now been designed for key-generation.

Several investigators classified flax varieties through arranging them into geographical or natural groups based on certain morphological characters. From them what mentioned by Clark (1920), Howard and Khan (1924), Vavilov (1926), Kugler and Remussi (1939). Whereas, Dillman (1953) constructed four keys, in an attempt, to classify the groups of common flax.

The present investigation had been designated

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to describe and arrange some flax introductions in taxa based on a combination of some morphological characters as possible.

MATERIALS AND METHODS

The materials used in this investigation were obtained from the flax field nursery of the fibre Crops Res. Section, twenty introduction imported from various Exp. Stations, as shown in Table (1), were sown in November 27th, 1971. Plants were arranged in rows three meters long and 20 cm. apart. This experimental plants received the common cultural processes necessary used at the flax breeding nursery. In recording data, plants adjacent to missing hills as well as one plant at each end of the row were discarded to avoid the borders effects. Ten plants were randomly chosen to score the following characters : petal colour (P.C.), flower shape (F.S.), flower diameter (F.D.), petal position (P.P.), anthers colour (A.), capsule diameter (C.D.), seed colour (S.C.), leaf length (L.L.), and leaf width (L.W.).

EXPERIMENTAL RESULTS

Description of the ten flax characters of the twenty introductions studied are shown in Table (2). The following is a list of the characters as recorded for each introduction :

- 1- Petals colour (i.e. P.C.) : White (i.e. W.) - blue (i.e. B.) - blue violet (i.e. B.V.) - Violet (i.e. V.).
- 2- Flowers shape (i.e. F.S.) : disc shaped (i.e. 1), star-shaped (i.e. 2), funnel shaped (i.e. 3).
- 3- Flowers diameter (i.e. F.D.) : average of 10 diameter measurements (18 - 31 mm. across).
- 4- Petals position (i.e. P.P.) : imbricate (i.e. +) valvate (i.e. -).
- 5- Anthers colour (i.e. A.) : blue (i.e. +)/yellow (i.e. -).
- 6- Capsule diameter (i.e. C.D.) : average of 10 capsules (6.2 - 7.6 mm.).
- 7- Seed colour (i.e. S.C.) : brown (i.e. +)/yellow (i.e. -).
- 8- Leaf length (i.e. L.L.) : average of 10 leaves (29-45 mm.).

Table 1. The code number, names and origin of various flax introduction according to the system of the Fibre Crops Research Section in Egypt.

Int. code No.	N a m e	Imported from
21	Argentina Cino 360	U.S.A.
26	Civus Cino 881	U.S.A.
57	(eef) 411704 Cino 1754	U.S.A.
83	(eef) stormont Garscino 1782	U.S.A.
112	(eef) SP 7242202 Cino 1816	U.S.A.
125	Zadar Cino 2234	U.S.A.
128	Fibra	Netherlands
133	Red wood	Newziland
144	Unryn	Japan
161	Sv. 63 1582	Sweden
168	Donskj 166	Sweden
170	Knyn	Sweden
182	Planta (Dieflax)	Sweden
196	Prov.	Argentina
198	Flo	Argentina
231	RIG	U.S.A.
240	11. 106	U.S.A.
273	Lenore	U.S.A.
299	Celoy ozan	Hungaria
301	Maroc	Hungaria

Table 2. Comparative observations of morphological characters for 20 flax introductions, missing or in applicable attributes are denoted by *

Int. code No.	P.C.	F.S.	F.D.	P.P.	A	C.D.	C.DR	S.C.	L.L.	L.W.
21	B.V.	2	31.0	+	+	6.8	+	+	32.0	5.5
26	B.V.	1	31.0	+	+	7.4	+	+	30.0	4.5
57	V	1	31.0	+	+	7.6	-	+	41.0	5.7
83	V	1	29.0	+	+	7.5	+	+	33.0	5.5
112	B	1	32.0	+	+	7.2	+	+	42.0	6.0
125	B.V.	3	31.0	-	+	7.5	+	+	29.0	4.0
128	W	2	23.0	+	+	6.7	-	+	30.0	4.0
133	B	1	27.0	+	+	7.6	+	+	33.0	5.0
144	V	1	29.0	+	+	7.6	+	+	37.0	5.0
161	B	3	25.0	-	+	7.3	+	+	34.0	5.0
168	B	2	25.0	+	+	6.9	+	+	37.0	5.5
170	B	2	25.0	+	-	7.6	-	+	39.0	4.5
182	B	3	27.0	-	+	6.5	+	+	35.0	4.5
196	B.V.	1	28.0	+	+	7.1	+	+	34.0	4.0
198	B.V.	1	29.0	-	+	*	-	+	36.0	4.0
231	B.V.	1	27.0	+	+	6.7	-	+	35.0	4.0
240	B.V.	2	29.0	+	+	7.4	-	+	42.0	4.0
273	B	2	18.0	+	+	7.3	-	+	45.0	5.0
299	B	2	18.0	+	+	6.9	-	+	35.0	4.5
301	W	2	17.0	+	+	6.2	-	+	38.0	4.5

9- Leav width (i.e. L.W.) : average of leaves (4-6 mm).

Considering the maximum contrast within the nine characters of the twenty introduction studied, it could be able to construct the following non-identical dichotomous key.

- 1- Capsule semidehiscence 2
 Capsule indehiscence 12
- 2- Corolla funnel-shaped or star-shaped 3
 Corolla disc-shaped 7
- 3- Corolla funnel-shaped, petals imbricate..... 4
 Corolla star-shaped, petals valvate 7
- 4- Petals blue-violet (in bud), flowers 31 mm.
 across, leaf length 32 mm. (Int. 21)
 Petals blue, flowers 25 mm across,
 leaf length 37 mm. (Int. 168)
- 5- Petals blue-violet, flowers 31 mm. across(Int. 125)
 Petals blue, flowers 27 mm.across or less 6
- 6- Flowers 25 mm. across, capsule diameter
 7.3 mm. (Int. 161)
 Flowers 27 mm. across, capsule diameter
 6.5 mm. (Int. 182)
- 7- Petals violet 8
 Petals blue or blue violet 9
- 8- Leaf length 33 mm, leaf width 5.5 mm. .. (Int. 83)
 Leaf length 37 mm, leaf width 5 mm. (Int. 144)
- 9- Petals blue 10
 Petals blue violet 11
- 10- Flowers 32 mm. across, leaf length 42 mm;
 leaf width 6 mm.....(Int. 112)
 Flowers 27 mm. across, leaf length 33 mm. ;
 leaf width 5 mm.(Int. 133)
- 11- Flowers 31 mm. across, leaf length 30 mm. ;
 leaf width 4.5 mm.(Int. 26)
 Flowers 28 mm. across, leaf length 34 mm;
 leaf width 4 mm.(Int. 196)
- 12- Corolla disc - shaped 13
 Corolla funnel shaped 15
- 13- Petals valvate (Int. 198)
 Petals imbricate 14
- 14- Flowers 31 mm. across, leaf length 41 mm.(Int. 57)
 Flowers 27 mm. across, leaf length 35 mm.(Int. 231)

15-	Petals white	16
	Petals blue or blue violet	17
16-	Flowers 23 mm. across, leaf length 30 mm.(Int.128)	
	Flowers 17 mm. across, leaf length 38 mm.(Int.301)	
17-	Anther yellow	(Int.170)
	Anther blue	18
18-	Flowers 29 mm. across	(Int.240)
	Flowers less than 19 mm. across	19
19-	Leaf length 45 mm, leaf width 5 mm	(Int.273)
	Leaf length 35 mm., leaf width 4.5 mm....	(Int.299)

D I S C U S S I O N

It is apparent from the previous results that the twenty introductions were divided into two main groups. One of them incorporated eleven introductions and characterized by capsule semidehiscence, while the other group contained nine introduction with indehiscence capsules. In addition, the present study indicated that introductions with indehiscent capsules had smooth septa. In this regard, Small (1907) mentioned that flax varieties with dehiscent bolls had also smooth septa.

Following the same procedure to split each main group to subordinate couplet by using the detailed description of each character, it could be able to identify the introductions both correctly and easily. The two lines of the same couplet might be terminated in two names, two numbers or a name and number.

S U M M A R Y

The policy adopted in this study for the synthesis of the key, from some morphological characters, aimed primarily to ascertain the name of unknown introduction of flax with the least possible effort and the shortest period of time. Consequently, the identification of twenty flax introductions according to petal colour, flower shape, flower diameter, petal position, anthers colour, capsule diameter, seed colour, leaf length and leaf width; were recognized.

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